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Leishmaniasis Fact Sheet

Leishmaniasis

Leishmaniasis is a vector borne disease caused by an obligate intracellular protozoa of genus Leishmania. It is transmitted by the bite of a sandfly. Human Leishmaniasis infection can manifest in three main forms; Visceral Leishmaniasis (VL) also known as Kala-azar, Muco -Cutaneous Leishmaniasis (MCL) also known as Espundia and Cutaneous Leishmaniasis (CL).

The Infectious Agent

Leishmaniasis is caused by around 21 Leishmanial species, which are transmitted by about 30 species of Phlebotomine sandflies. In Sri Lanka Cutaneous Leishmaniasis was first diagnosed in patients presenting with cutaneous lesions in exposed areas of the body with a history of activities related to shrub jungles, by smear and biopsy microscopy. Isolation of parasites in culture for the first time has been made in 2002 with 5 isolates confirming Leishmania *donovani, which* is usually associated with Visceral Leishmaniasis. In Asian and East African countries it has occasionally been the cause of Cutaneous Leishmaniasis. Clustering of cases of Leishmaniasis has been reported in Sri Lanka in a few areas,mainly in Hambanthota and Polonnaruwa districts. Most of these were cases of Cutaneous Leishmaniasis. The first case of Visceral Leishmaniasis was reported from Anuradhapura in 2006. In 2011, 940 cases of Cutaneous Leishmaniasis were reported in Sri Lanka out of which 723 were confirmed through field investigations.

Reservoir

Humans are accidental hosts but can also act as a reservoir. Wild rodents (rats), marsupials, and carnivores often including jackals, domestic dogs and other mammals are the reservoir hosts.

Vector

Sandflies belonging to a subspecies of the genus phlebotomous are the vectors of Leishmaniasis. In Sri Lanka 2 species of phlebotomine are reported; P.*argentipes* and P.*stantoni*. Phlebotomus *stantoni* is a jungle species feeding on wild rodents. P.*argentipes* is also anthropophagic. This is a significant factor because P.*argentipes* is the vector of L.*donovani* which causes Visceral Leishmaniasis, the most severe form which could be fatal. The sand fly is 2-3 mm long noiseless flier, that rests in dark , moist places and mostly active in the evening and night.

Pathophysiology

In Cutaneous Leishmaniasis,on biting their hosts infected female sandfly regurgitate the flagellar leishmania promastigotes into the skin which invade or are phagocytosed by host cells primarily macrophages causing the typical skin lesion. In Visceral Leishmaniasis protozoa disseminate from dermis through the lymphatic and vascular systems leading to infection of other monocytes and macrophages. Infiltration of bone marrow, lymph nodes, liver, spleen results. Certain strains can disseminate from skin to cause mucosal lesions (Muco-Cutaneous Leishmaniasis) even years after the primary cutaneous lesions has healed.

Mode of transmission

From the reservoir host , through the bite of an infectious female sandfly.

Incubation period

Cutaneous Leishmaniasis : At least a week to few months.
Visceral Leishmaniasis : Generally 2-6 months. Range is 10 days to several years.

Period of communicability

Although the disease is not directly transmitted from human to human, it can be transmitted through the vector as long as parasites remain in lesions. In untreated cases this period can range from 5 months up to 2 years.

Risk factors

Outdoor occupational exposure is an established risk factor. Occupational groups such as those working in forest areas are at risk. Having potential reservoir hosts in the environment and living in houses in close proximity to forests are also considered as risk factors. Generally, the disease is more common in rural than in urban areas.

Cutaneous Leishmaniasis

Incidence / Reported cases in Sri Lanka
In Sri Lanka CL cases reported in the past were limited to Middle East returnees. In 1992 the first locally transmitted/acquired case was reported in Ambalantota and the second case was reported in 1995 from Mahiyangana. In 2011, 358 cases were reported from Anuradhapura and 156 cases were reported from Polonnaruwa and several cases were reported from different other parts of the country mainly in Hambantota district.

Clinical Presentations

CL is a polymorphic disease of the skin. It is characterized by one or more cutaneous lesions on areas where sand fly has fed on. The disease starts with a macule then a papule, which enlarges and then becomes an ulcer, with a rare possibility of the lesions remaining non-ulcerative and diffuse. They often end up as skin lesions with a raised edge and a central crater. The local lymph nodes draining the affected area may be enlarged. In Sri Lanka, lesions are usually non tender, non itchy papules (early lesions), scaling single nodules or dry crust forming single or multiple ulcers .Lesions may heal spontaneously within weeks to months, or last for a year or more.

Diagnosis

Laboratory diagnosis is done by microscopic identification of the non motile, intracellular form of the protozoa (amastigote). This is done through stained smears of material from the edges of the lesions and punch biopsies of the lesions or by culture of the motile, extracellular form (promastigote) on suitable media.

For diagnosis, patients must be referred to the closest dermatology clinic where expertise and facilities for skin biopsy and parasitological microscopy are available.

Treatment

For many cases of Leishmaniasis, decisions on whether treatment is required, the form of treatment and the length of treatment involve careful evaluation of many factors such as types of syndromes, species of the parasite, geographical location of where the patient got infected and potential toxic effects of the drugs.

Following are some of the treatment options available for the treatment of CL.

- Cryotherapy
- Parenteral pentavalent Antimony compounds
- Oral antifungal drugs (Ketoconazole, Itraconazole etc.)
- Liposomal amphotericine B

Various other drugs and schedules have been used with encouraging results. Whenever treatment options are needed it is advisable to consult a Dermatologist.

Visceral Leishmaniasis - Kala-azar

This is a chronic systemic disease caused by intracellular *Leishmania donovani, Leishmania infantum* and *Leishmania chagasi.* The disease is characterized by fever (gradual or sudden onset, continued and irregular), hepatosplenomegaly, lymphadenopathy, weight loss, anemia with leukopenia. If untreated, this condition is usually fatal.

Muco-Cutaneous Leishmaniasis

In untreated cases of Cutaneous Leishmaniasis the infection that started in the skin may rarely spread to mucous and subcutaneous tissues of the nose or mouth causing sores. This is known as Muco-Cutaneous Leismaniasis (Espundia). This can happen with some types of the parasite found in Central and South America. Muco-Cutaneous Leishmaniasis might not be noticed until years after the original skin sores have healed. The best way to prevent Muco-Cutaneous Leishmaniasis is to treat the cutaneous infection before it spreads.

Prevention and Control of Leishmaniasis

Prevetion and control of Leishmaniasis is based on avoiding sandfly bites. The following advice will be useful to the public living in areas known to have local transmission of Cutaneous Leishmaniasis.

A. **Prevention of sand fly bites**
    1. Staying away from shrub jungles and avoiding outdoor activities as much as possible, especially from dusk to dawn when the sand flies are most active.
    2. Usage of bed nets (treated with permetrin) - whenever possible both during the day and night .Treatment of bed nets with permetrin is known to be effective for several months to repel the sandfly.
    3. Usage of clothing that cover extremities
    4. Application of recommended insect repellents in exposed areas also can be useful. Care must be taken in the case of children.

B. Suppression of the vectors

- Insecticide spraying used for mosquito control can be used effectively against the sand fly.

C. Suppression of the reservoir

- Further research has to be carried out to identify any reservoirs specific to the country.

Notification and investigation

Leishmaniasis is a notiafiable disease in Sri Lanka. Reporting of all suspected or confirmed cases of leishmaniasis to the Medical Officer of Health (MOH) is therefore a legal requirement. Once such a case is notified to the MOH, in addition to carrying out a routine investigation and reporting, a special investigation form should also be filled by the MOH staff and sent to the Epidemiology Unit through the Regional Epidemiologist. When a case is reported, the Regional Epidemiologist with the assistance from the Regional Malaria Officer/Office could carry out an entomological survey to identify the vector with a view to plan out effective control measures.

Further Reading

1. Control of Communicable Diseases in Man – Abram S. Benenson
2. Locally acquired CL from central Sri Lanka – Kandy Med J 1995;(4): 54-56
3. CL: an emerging health risk in Sri Lanka – CMJ – 2001;(46): 151-2
4. Clinical features, risk factors and efficacy of cryotherapy in CL in Sri Lanka – CMJ 2003;(48): 10-12
5. Leishmaniasis – THE LANCET 1999;(354) 1191-99
6. Control of Communicable Diseases Manual – David L. Heymann